Tessera signs licensing agreement with Cochlear

Cochlear Limited has signed an agreement licensing Tessera's semiconductor packaging technology for use in Cochlear's Nucleus implant system, which includes implantable hearing devices designed to allow individuals with severe to profound hearing loss to perceive sound.

Cochlear plans to incorporate Tessera's MicroBGA technology into its Nucleus cochlear implant systems. The MicroBGA technology, enables highly reliable, small form factor electronic products and is logical for medical applications where reliability and compact size are key requirements.

"Tessera's technology has been integrated into a range of consumer electronic products such as cellular phones, personal computers, and gaming stations," said Nicholas Colella, Tessera's senior VP of operations.

Included in Tessera's license with Cochlear are over 150 patents covering Tessera's Compliant Chip technology. This covers a broad range of chip-scale and multi-chip package types, including integrated circuit devices packaged in "face-down," "face-up," "fold-over," "stacked," and "system-in-package" (SiP) formats.

Tessera's intellectual property is used in many forms of advanced packaging, covering a wide range of materials and assembly processes.

Scanning Scandium

Researchers at the University of Arkansas and the College of William and Mary discovered that growing atomic layers of certain materials on a semiconductor surface creates a strain inducing a large energy conversion and emits light in the entire range of the visible spectrum. This could be used to design new multifunctional materials exhibiting both properties.

By "compressing" or straining the semiconductor Scandium nitride (ScN) at the atomic level, University of Arkansas physicist, Vivek Ranjan, Laurent Bellaiche, associate professor of physics and Eric J. Walter, College of William and Mary, show that the material goes through optical changes that take it through the visible spectrum.

As the ScN compound mechanically "compresses" itself to match a smaller atomic surface, it also changes from nonpolar to polar, exhibiting a piezoelectric response characteristic of ferroelectric materials.

The researchers plan to investigate other semiconductors to see if the same circumstances produce similar effects. As they believe other semiconductors will have this characteristic.

Single electron motion sensor

Researchers from the University of California at Santa Barbara have combined a single electron transistor and a nano-mechanical beam, which is a microscopic, vibrating cantilever. The SET, is very sensitive to electrical charge. The researchers put the SET very close to the nano-mechanical beam and put voltage through the resonator. The voltage made the beam vibrate, and the vibrations affected the way single electrons passed through the transistor. Displacement, or how much an object has moved, can be inferred from this measurement. The researchers are currently working on making a higher frequency resonator.

Spintronics

Recent successes by a Nottingham University group includes the growth of GaMnAs material with world record Curie temperatures, and ferromagnetic TiCoO2 and GaMnN which shows ferromagnetism at room temperature. A characteristic of the GaMnAs layers grown by the group is their low resistivity that is accompanied by very weak high field magneto-resistance. This has enabled the group to separate the normal and anomalous contributions to the Hall effect and make the first accurate measurements of hole densities across a range of Mn compositions. Using this information the first meaningful comparison of theoretically predicted Curie temperatures and extraordinary Hall conductivities with experiment have been made. The samples were grown by Low Temperature Molecular Beam Epitaxy (LTMBE) technique. The In composition of InGaAs superlattice spacers and InGaMnAs magnetic layers was chosen to be equal to 50% while the Mn concentration was equal to 5.5 % in GaMnAs single layers and 6 % in the magnetic layers of superlattice structures.

http://www.nottingham.ac.uk/unimat/expertise/electronics/ferro.phtml

Technology: Competitive & Complementary

Ultrasonic enhanced etching

Researchers from Shanghai's Fudan University, have devised a new way to fabricate porous silicon material. The ultrasonically enhanced anodic electrochemical etching is developed to fabricate luminescent porous silicon (PS) material. Samples prepared by the etching method exhibit superior characteristics to those prepared by conventional direct current etching. PS microcavities with much higher quality factors can be fabricated. The improved quality can be ascribed to increased rates of escape of hydrogen bubbles and other etched chemical species from the porous silicon pillars' surface. This process will cause the reaction between the etchant and the silicon wafer to proceed more rapidly along the vertical direction in the silicon pores than laterally.

Silicon forecasts

The leading suppliers of silicon wafers expect year-end wafer shipments for 2003 to be 10 % higher than 2002. The SEMI Silicon Manufacturers Group (SMG) Consensus Forecast, anticipate shipments will increase by 15% in 2004. The Consensus Forecast, obtained through surveying SMG members, who provide 95% of world polycrystalline or monocrystalline silicon and silicon wafers, provides a shipment outlook for 2003 through 2006. The survey forecast results show silicon shipments reaching 5,916m² inches in 2004, surpassing 6,300m² inches in 2005 and 6,600m² inches in 2006. The 300mm wafer shipments are key to anticipated growth, with the SMG expecting 300mm wafer shipments to reach 20% of total shipments by 2006.